



Information Technologies
Union Pacific Railroad

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April 8, 2013

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Room TW-A325
Washington, D.C. 20554

RE: Support of Waiver Request from PTC-220, LLC for Waiver of Certain 220 MHz Rules. (WT Docket 13-59)

Ms Dortch:

PTC-220, LLC (PTC-220) has recently submitted to the FCC a request for waiver of certain Title 47 rules under Part 90, Subpart T. Specifically, PTC-220 seeks relief from:

- 47 CFR 90.729(b), which limits transmit power and antenna height in the 221-222 MHz band, and
- 47 CFR 90.723(f), which requires coordination among Phase II licensees operating within 200 KHz of each other.

Union Pacific Railroad strongly supports PTC-220's request for waiver of these rules.

I. Background

Union Pacific Railroad (UPRR) is the nation's largest Class I freight railroad, with operations in 23 states west of the Mississippi River. Operating more than 7000¹ locomotives over 32,000 route miles, UPRR

¹ All statistics in this paragraph taken from or computed from "Union Pacific Corporation 2011 Fact Book": http://www.up.com/investors/attachments/factbooks/2011/fact_book.pdf

serves major Gulf and West Coast ports as well as interchange points with both Mexico and Canada. UPRR also serves Eastern Markets through rail gateways at Chicago, Memphis, St. Louis, and New Orleans. With an average of over 270,000 rail cars on the network, UPRR handled more than 9 million carloads of freight in 2011. This level of traffic was accomplished while consuming only one gallon of fuel for every 490 ton-miles of freight, making rail one of the most efficient and environmentally friendly modes of surface transportation.

UPRR and the other six US Class I railroads are equal co-owners of PTC-220.

II. Positive Train Control

The Rail Safety Improvement Act of 2008 mandated that freight and passenger rail operators implement new systems to prevent many rail accidents. These “Positive Train Control” (PTC) systems must be operational by the end of 2015². UPRR is actively engaged in the development and deployment of these systems, and will ultimately spend billions of dollars on the effort. Because of the high cost of these systems and the potential impact on rail operations, UPRR is keenly interested in maximizing the efficient performance of the new PTC systems. Many congested areas on the US rail network are operating very high levels of traffic, and a local disruption or other inefficiency can cause widespread negative effects.

One of the crucial components in developing PTC systems is a wireless communication network. Through this network, a Train Management Computer (TMC) on each locomotive gathers real-time information about the state of track switches and signals ahead, as well as other data from a central dispatch office. Using this information, the TMC can determine, second by second, whether it is safe for

² See Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, § 104, 122 Stat. 4848 (2008)

the train to proceed. If the flow of information over the wireless links is interrupted or degraded, the TMC is programmed to make the safest decision, which may be to slow or stop the train. Though safety would not be directly impacted by inefficiencies in the communications network, operational productivity certainly could be.

III. PTC-220 Waiver Requests

Since PTC-220 will be the primary, if not the only source of spectrum for UPRR's PTC operations, we have a high interest in the availability and usefulness of PTC-220's licensed spectrum. PTC-220's waiver requests are intended to maximize the efficient use of the spectrum licenses it holds. This implies that the maximum number of PTC wireless channels would be available to our radio network designers. An inadequate number of channels forces suboptimal design with higher probability of poor radio coverage or high levels of interference. This is most critical in areas of high rail traffic congestion, such as Chicago. UPRR shares the Chicago area with ten other railroads that will be operating PTC equipment. Sophisticated computer analyses show that even after the substantial efficiencies gained by high levels of base station sharing among railroads, PTC-220's spectrum holdings will not be sufficient to support a PTC communications network in Chicago³. PTC-220 is actively involved in acquiring additional spectrum in Chicago, but it will still not be sufficient without the relief the waiver requests ask for. Analyses in other rail-heavy cities, such as Kansas City and St. Louis show that PTC-220's spectrum may be sufficient at least for the near term, but again, only if the waivers are granted⁴.

Specifically, waiver of the power and antenna height limits in 47 CFR 90.729(b) will make all PTC channels equally usable to meet coverage and traffic demands, affording network designers maximum

³ "Spectrum Needs for Positive Train Control", presentation to FCC, December 15, 2011. Posted on WT Dockets 11-79 and 08-256

⁴ Ibid.

flexibility in crafting an efficient network with optimum use of spectrum. PTC-220 has offered significant protection mechanisms to prevent or mitigate interference to other nearby licensees. PTC-220's member railroads, including Union Pacific, have many decades of experience in practical methods of anticipating and avoiding radio interference, and have the internal technical resources to address any issues quickly.

Further, replacing the provisions of 47 CFR 90.723(f), which currently require coordination among Phase II licensees for placement of their stations, with more deterministic rules for station location will greatly simplify the network design and deployment process. These discrete rules will offer consistent levels of protection to Phase II licensees, while allowing Union Pacific and other PTC operators to avoid the time consuming and sometimes complex process of negotiating with what could amount to hundreds of licensees across the country. Indeed, Union Pacific has found that it can sometimes take weeks or months just to determine the correct individual to coordinate with.

IV. Risk if Waivers are not Granted

Under current rules, the spectrum in the upper half (221-222 MHz) of the band is of marginal usefulness to PTC. UPRR and/or PTC-220 would be forced to seek more spectrum in a number of cities, including Chicago (beyond the additional spectrum now being pursued). If the quest for more spectrum were unsuccessful, the result would be a suboptimal PTC system in those areas with challenging levels of coverage or interference, or both. Beyond this, if Union Pacific and other PTC railroads are required to coordinate the placement of individual PTC stations with (potentially many) other nearby Phase II licensees, the time required will likely threaten the successful completion of PTC systems by the mandated deadline of December 31st, 2015.

V. Conclusion

For the foregoing reasons, UPRR asks that the Commission grant the waivers requested by PTC-220 at its earliest possible convenience.

Respectfully,

A handwritten signature in black ink, appearing to read "E. L. Hollingsworth". The signature is written in a cursive, flowing style.

Edwin L. Hollingsworth
Senior Director, Advanced Wireless Systems,
Union Pacific Railroad